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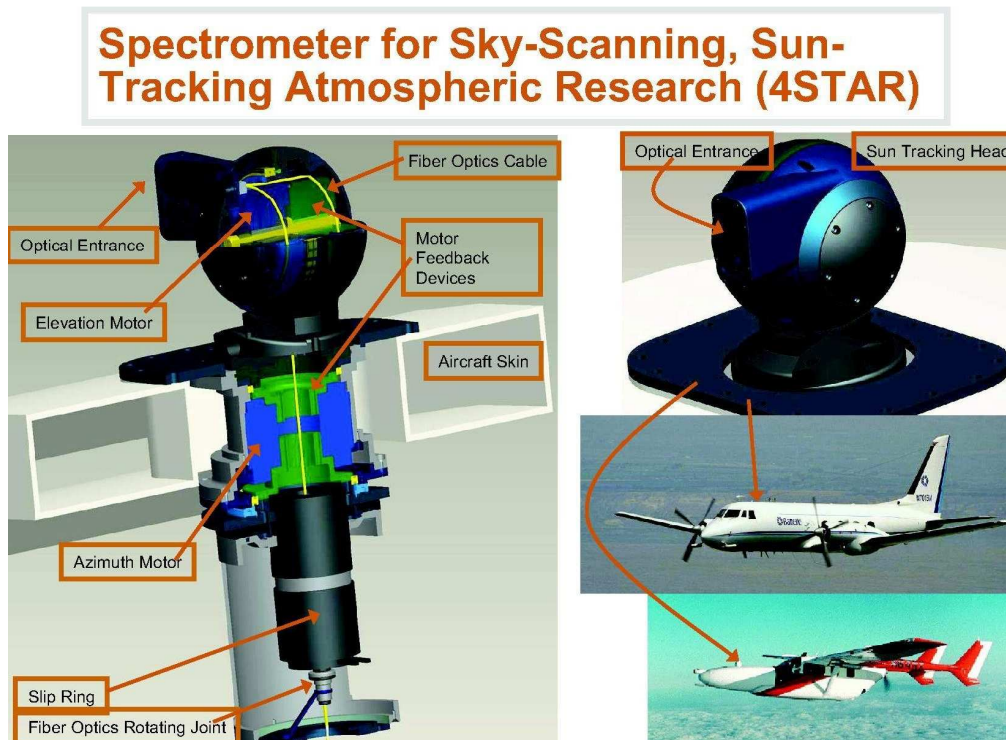
Gulfstream G-159 Sun Photometer Installation

1 February 2010

The installation of the Sun Photometer is to be made to the Gulfstream model G-159 (G-I) aircraft, operated by Battelle for the Pacific Northwest National Laboratory. The aircraft is the Gulfstream model G-159, S/N 074, N701BN. The installation is proposed to be performed and approved by FAA Form 337, by a Field Approval.

A view of the unit is shown in Figure 1. Similar units have been installed on other aircraft.

Figure 1 – Sun Photometer



Structural Issues

The unit is to be mounted into the cockpit overhead hatch; this hatch is an auxiliary emergency exit, and is not a required exit path. Aerodynamic loads and inertia loads will be determined and applied to the supporting structure. All structural engineering data will be DER reviewed and approved (by FAA Form 8110-3).

Electrical Issues

There is an auxiliary generator utilized for power separate from the aircraft flight systems, with cockpit shut-off control. There is adequate power for the intended use.

Icing Issues

The aircraft is certified for flight into known icing, but the intent during operation using the Sun Photometer is to avoid icing conditions.

Bird Strike

Similar units have been installed on other aircraft, and though susceptible to bird strikes, the supporting structure for the Sun Photometer is being designed to prevent the unit from easily tearing out or away from its mounting. Heavy structure will be utilized; even though the unit may be damaged in the event of a bird strike, the design goal is to keep the unit attached to the aircraft.

Operations

The aircraft is used in experimental research projects for gathering data on air pollution, trace element concentrations, cloud moisture chemistry, remote sensing, and weather parameters, and carries a broad range of instruments and sensors. The aircraft is operated in the restricted aircraft category, and flown with required crewmembers only.

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